MODEL PAPER

SECOND YEAR B.Sc., DEGREE EXAMINATION

SEMESTER-IV

CHEMISTRY COURSE -IV: INORGANIC, ORGANIC & PHYSICAL CHEMISTRY

Time: 3 hours Maximum Marks: 75

PART- A 5 X 5 = 25 Marks

Answer any **FIVE** of the following questions. Each carries **FIVE** marks

1. Describe the 18 electron rule of mono nuclear and polynuclear metal carbonyls with suitable examples.
2. What are epimers and anomers. Give examples.
3. Discuss about iso electric point and zwitter ion.
4. Discuss the Paul-Knorr synthesis of five membered heterocyclic compounds.
5. Explain Tautomerism shown by nitro alkanes
6. Discuss the basic nature of amines.
7. Write the differences between thermal and photochemical reactions.
8. Derive heat capacities and derive $C_p - C_v = R$

PART- B 5 X 10 = 50 Marks

Answer **ALL** the questions. Each carries **TEN** marks

9 (a). What are organometallic compounds? Discuss their Classification on the basis of type of bonds with examples.

(or)

(b). Discuss the general methods of preparations of mono & bi-nuclear carbonyls of 3d series.

10 (a). Discuss the constitution, configuration and ring size of glucose. Draw the Haworth and Conformational structure of glucose.

(or)

(b). (i) Explain Ruff's degradation.

(ii) Explain Kiliani- Fischer synthesis.

11.(a). What are amino acids? Write any three general methods of preparation of amino acids.

(or)

(b). Discuss the aromatic character of Furan,

Thiophene and Pyrrole. 12.(a). Write the mechanism for

the following.

(i) Nef reaction (ii) Mannich reaction

or

(b).(i) Explain Hinsberg separation of amines.

(iii) Discuss any three synthetic applications of diazonium salts.

13.(a). What is quantum yield? Explain the photochemical combination of Hydrogen- Chlorine and Hydrogen - Bromine.

(or)

(b).Define entropy. Describe entropy changes in the reversible and irreversible process.

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